

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 1 of 3
Reviewed & approved by: /		2006 09 09

A- REQUEST

ECR : —

ECO : 4

Nature of proposed change :	One customer informed us that the ARM calculation on our instruction is not correct. (Ass 2010-03-03-01)
Reason :	Could result in web height off slightly.
Submitted By :	Claude Boule / Can. file
Date :	2010 . 03 . 10

B- IMPACT ANALYSIS

Product Manager	OK - Trigger modif by M.Z. Signature : N. Bateau /date 2010 03 10
Operation Manager	OK - no change to product itself only Document Signature : N. Bateau /date 2010 03 10
Quality System Manager	OK - no change to QS Signature : N. Bateau /date 2010 03.10
Regulatory affairs Manager	OK - Signature : N. Bateau /date : 2010.03.10
Supplier A	N/A Signature : /date :
Supplier B	N/A Signature : /date :
Other	N/A Signature : /date :

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Reviewed & approved by: /		2006 09 09

C- DECISION

Risk analysis	<p>The suggested action is actually contributing to reducing risks as it involves a more precise value for the calculation of the WTB.</p> <p>So OK.</p> <p>Signature: <u>D. Zaitan</u> /date: <u>2010.03.10</u></p>
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Decision	<p>Go ahead as it can only be positive improvement.</p> <p>Signature: <u>N. Baita</u> /date: <u>2010.03.10</u></p>
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D- ACTION PLAN

Action	Resp	Due date :	Verified by :
1) Submit case to M-2	DM	2010 03 10	DP
2) Obtain revised instruction #101	M2/DP	2010 03 30	DP (2010.04.08)
3) Obtain confirmation as to the need or not of contacting customers in field for the need to update WTB.	M2/DP	2010 03 30	DP (2010.04.08)
4) Update documents for BP350 Streamlined in stock.	DM	2010 03 30	DP/2010.04.30
5) Close ECO.	DP	2010 04 30	DP/2010.05.03

Effective date : 2010 05 03	Effective lot no : 0090521-01 & all lots issued after 2010.04.25
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Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
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E- VERIFICATION

Verified Elements :	By/ date :
→ The only piece that was left in stock was updated (090521-01) & the new batch to be released next week will have the updated documents.	DB 2010.04.30
→ DAF, & DMR have been updated	DB 2010.05.03

F- V ALIDATION

Validated Elements :	By/ date :
→ I obtained confirmation from Mirko Angela that the nature & Scale of the modif to the WPB data does not require us to inform customers that already have our streamlined heapfiles?	DB 2010.05.03

G- CLOSURE

I confirm that the designated change has been performed successfully :
Signature : <u>D. Bailean</u> /date : <u>2010.05.03</u>

Nathalie Barbeau

From: Simon Bernier [simonb@ats-ast.com]

Sent: April 27, 2010 11:31 AM

To: Nathalie Barbeau

Subject: RE: BP350 - Documentation et question vs W&B (ECO 4 / BP350) / message 1

1) Est-ce que la l'ampleur de l'ajustement de la valeur du ARM pour le Weight & Balance est suffisamment significative pour que je doive informer les clients qui sont propriétaires de bearpaws BP350?

Non

Si oui :

2) Est-ce que cela devrait s'appliquer seulement aux propriétaires de bearpaws du modèle courant de format Streamline?

3) Est-ce que cela s'applique aussi aux clients du format de pad initial avec Pockets?

Merci de me revenir d'ici mardi le 27 avril 2010. Je voudrais adresser la situation avant de partir en vacances.

Ciao!

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6
main tel: +1 418 561 4512
plant tel: +1 418 836 4525
plant fax: +1 418 836 4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: April 24, 2010 12:48 PM
To: 'Mirko Zgela'
Subject: BP350 - Documentation et question vs W&B (ECO 4 / BP350)

Allo Mirko,

Je suis à passer à travers toute la paperasse pour la modif de l'instruction pour le w&b
En complétant mon formulaire ECO, j'ai réalisé que j'avais oublié de te demander les questions
suivantes. Pourrais-tu me donner une réponse en réplique à ce courriel afin que je le joigne à mon
dossier :

1) Est-ce que la l'ampleur de l'ajustement de la valeur du ARM pour le Weight & Balance est
suffisamment significative pour que je doive informer les clients qui sont propriétaires de bearpaws
BP350?

Si oui :

2) Est-ce que cela devrait s'appliquer seulement aux propriétaires de bearpaws du modèle courant de
format Streamline?

3) Est-ce que cela s'applique aussi aux clients du format de pad initial avec Pockets?

Merci de me revenir d'ici mardi le 27 avril 2010. Je voudrais adresser la situation avant de partir en
vacances.

Ciao!

Nathalie Barbeau
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plant tel: +1 418 836 4525
plant fax: +1 418 836 4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: April 24, 2010 12:59 PM
To: 'Mirko Zgela'
Subject: BP350 - Identification de la version sur entete de page

Allo Mirko,

Tel qu'indiqué à mon message d'hier, je voudrais que l'on fasse marche arrière et qu'on conserve le mode d'identification de version sur l'entete de page comme j'avais avant.

J'ai réalisé que cela demanderait de changer ma procédure et mes instructions de systeme qualité et je n'en ai vraiment pas envie.....De plus, avec le commentaire de Claude Boulé d'hier, cela veut dire que les clients vont commencer à m'appeler pour cela.

Donc svp remettre la lettre après le no de document en entete de page, pour la version.
Je crois que pour la dernière version il s'agit de E.

Merci de me faire parvenir le document ajusté dès que possible afin que je puisse le faire imprimer en multiples copies pour ma nouvelle grosse batch de BP350.

Désolée.... J'imagine que ce genre de détail te rends fou!!!! Désolée, Désolée...

Merci!

Nathalie Barbeau
VP Commercial Affairs

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877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6
main tel: +1 418 561 4512
plant tel: +1 418 836 4525
plant fax: +1 418 836 4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com



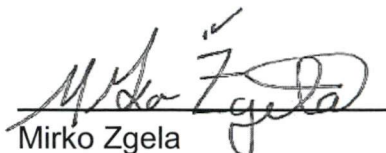
Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev F)

APPROVED BY:


Mirko Zgela

DATE: APRIL 8, 2010

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.

 D. K. S. 2010.04.08

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	E	DAR 310	April 8, 2010
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C	DAR 310	July 31, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R03	DAR 310	July 31, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block 1/4"	R01	DAR 310	Aug 8, 2006



3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	H-87
Eurocopter	AS 355 E	
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

[1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

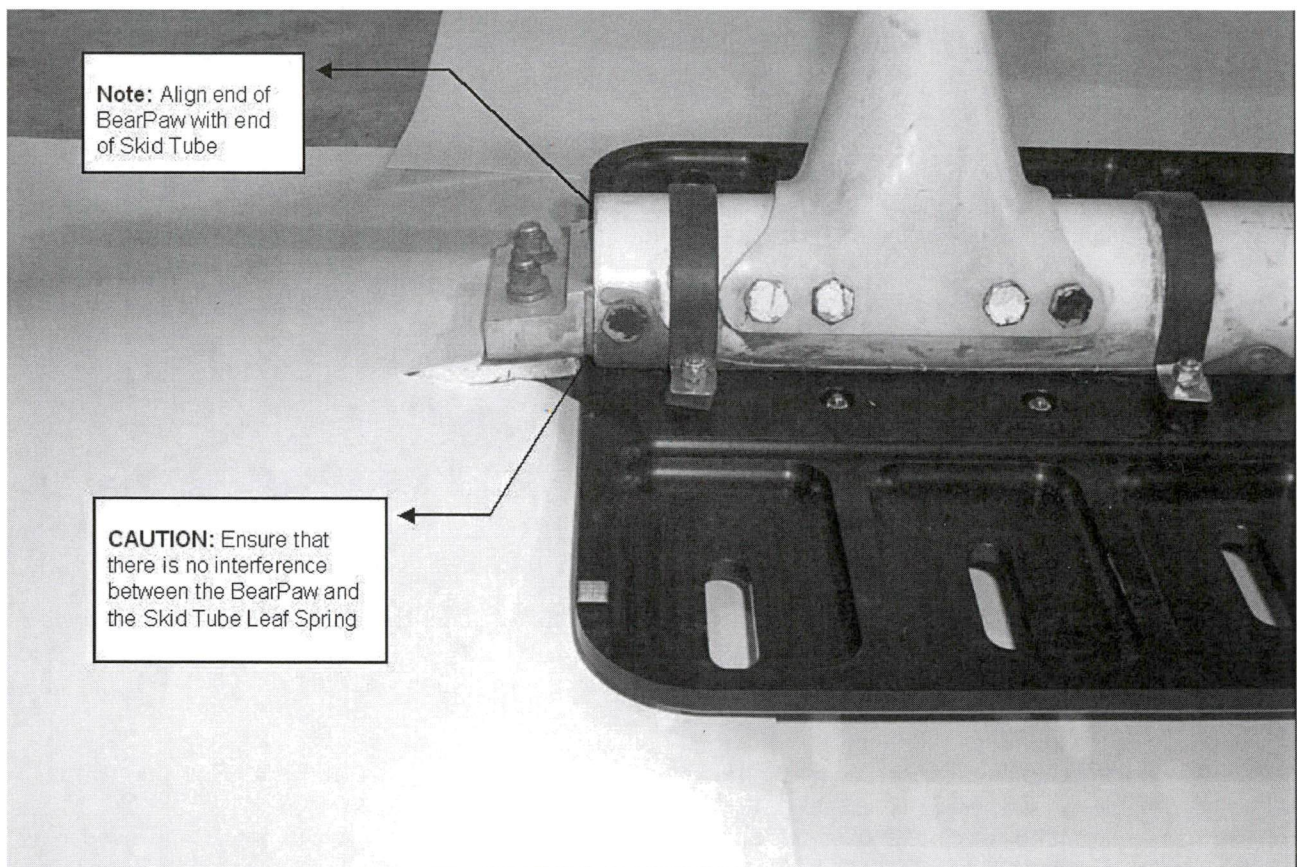
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kG
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kG

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Drawing no./name
BearPaw Model BP350	1	112-0002-00	VNR(112-0002-00) / BearPaw Assembly VNR (112-0002-00-S) / Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	VNR106 / BearPaw BP350 – Pad
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	VNR106S / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	VNR107 / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	VNR089 / BearPaw - Slotted Clip Support

Filler blocks 1/4"	6	314-0012-01	VNR099 / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	VNR086 / IceBlade Assembly
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use BearPaw Pad P/N 314-0018-01 for VNR P/N 112-0002-00 and BearPaw Pad P/N 314-0018-01-S for VNR P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear and
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear, &
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	

C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	<u>Stiffeners:</u> NO cracks in stiffeners.
E	0,375	0,075	<u>For P/N 112-0002-00-S Only</u>

Overhaul Requirements


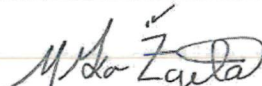
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20,2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to CofG data

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 8, 2010 Date:
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 8, 2010 Date:

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) or;
BearPaw Assembly, drawing no. (112-0002-00-S)

Annex B

See: BearPaw Pad, drawing no. VNR106. Page 2 of 2 or;
BearPaw Pad, drawing no. VNR106-S. Page 2 of 2.

Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00).
P/N 112-0002-00

Case no.	Charge	Date	GL
5	Charge bolt in a	20-nov.-03	GL
A	Initial issue	22-sept.-05	GL

Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00-S).
P/N 112-0002-00-S



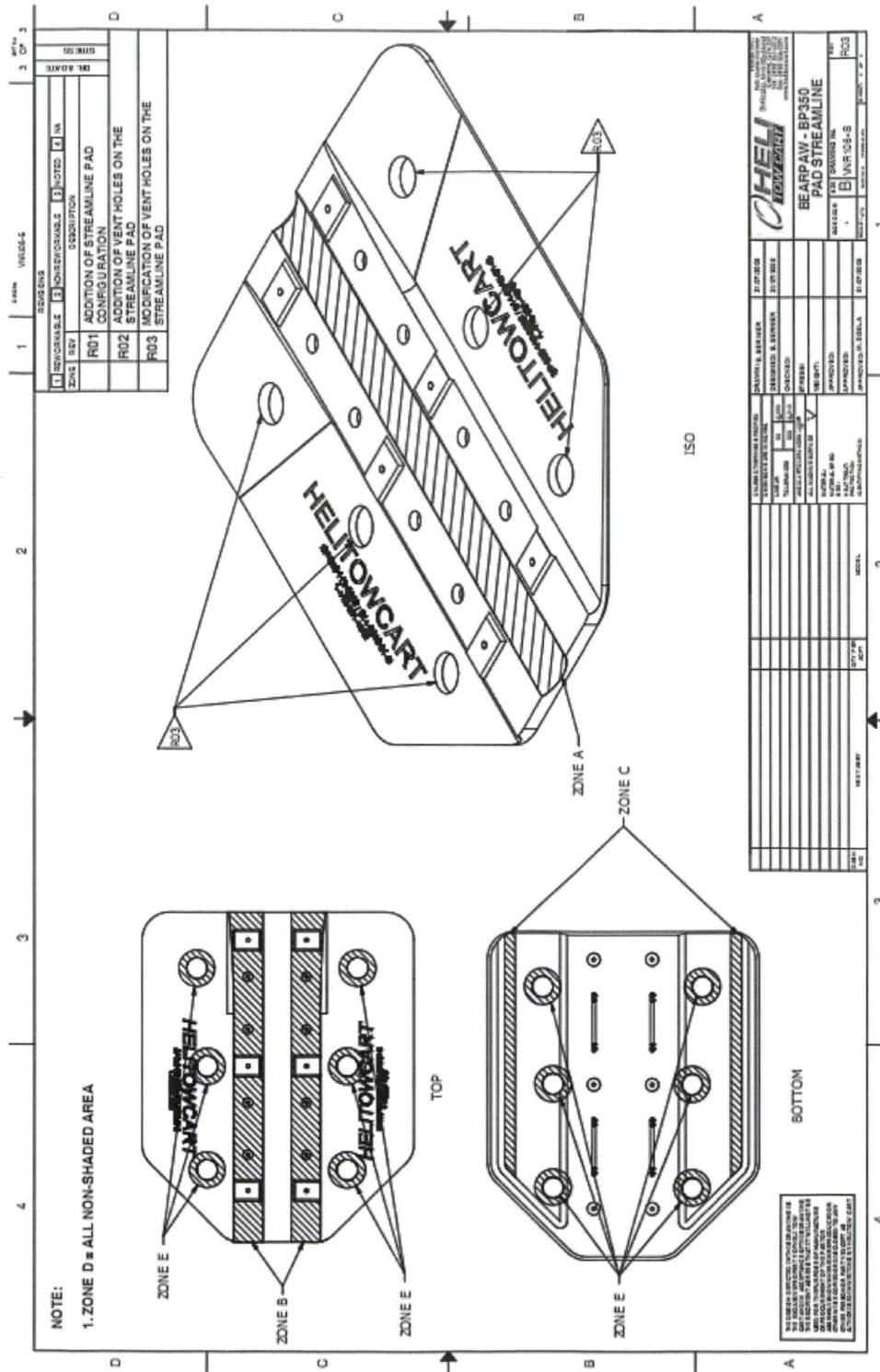
Annex B

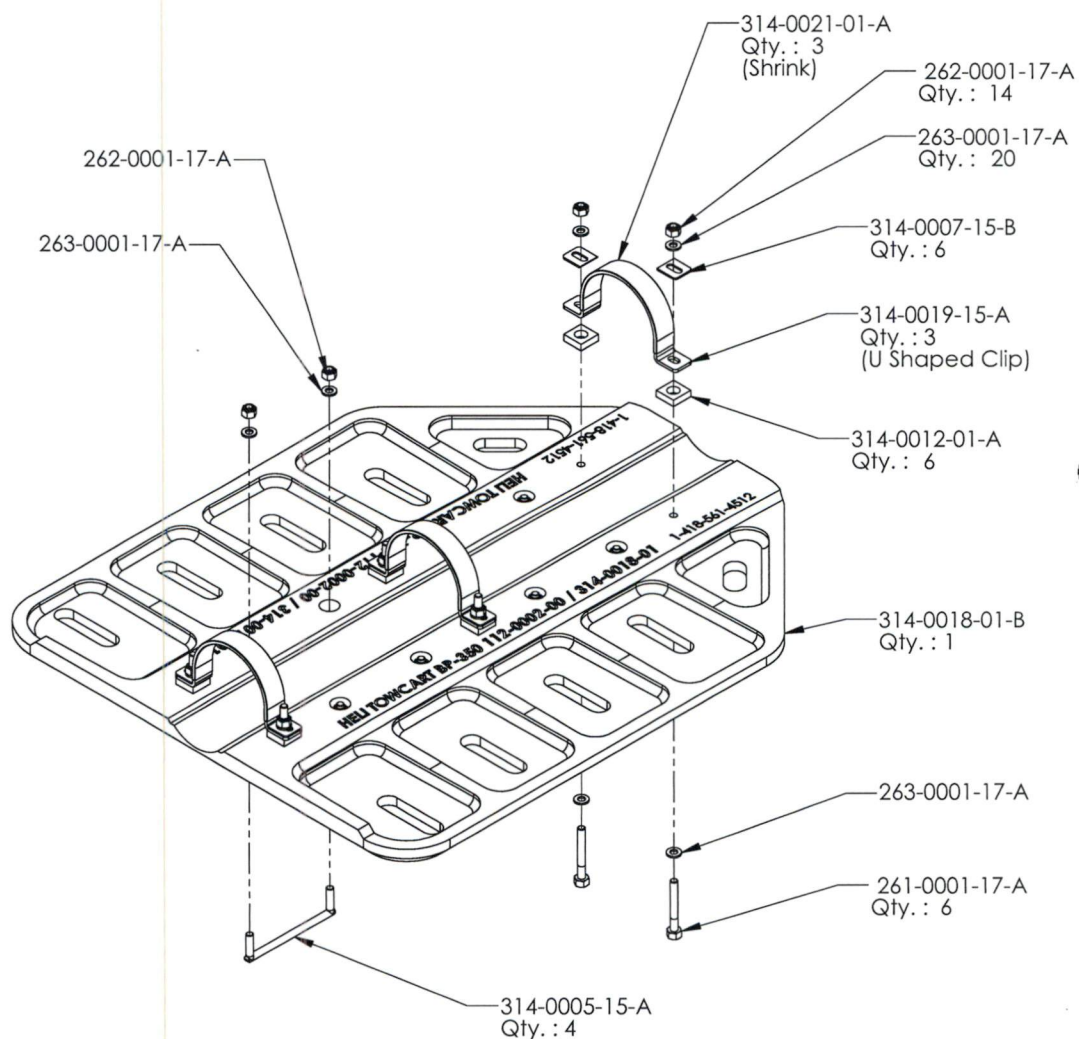
BearPaw Pad, Drawing no. VNR106. Page 2 of 2.
P/N 314-0018-01



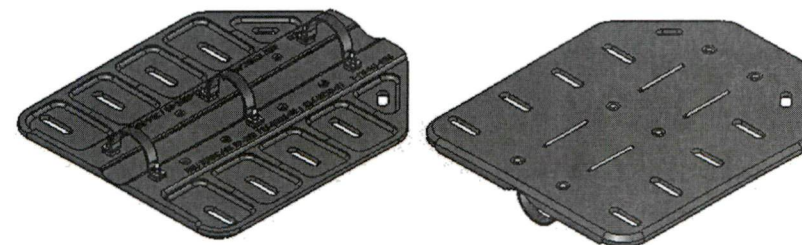
Annex B

BearPaw Pad, Drawing no. VNR106S. Page 2 of 2.
P/N 314-0018-01-S





No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-15	B
5	6	Bearpaw - Filler Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN960-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



Note : Iceblade assembly can be omitted from installation (Optional)

B	Change bolt size	20-nov.-06	G.L.
A	Initial Issue	29-sept.-06	G.L.
Rev.	Description	Date	By

		Vanair inc. 860, Marie-Victorin St-Nicolas, Lévis (Québec) Canada, G7A 3S9 Tél. (418) 561-4512 Fax (418) 836-2291 www.helitowcart.com		THIS DOCUMENT IS PROPERTY OF VANAIR INC. WRITTEN PERMISSION FROM VANAIR INC. SHALL BE OBTAINED PRIOR TO COPYING, USING OR MODIFYING.	
		Titre / Title: Bearpaw BP-350 - Assembly		Matériel / Material:	
Dessiné par / Drawing by: G.Lapointe		Date: (mm/dd/yyyy) 11/20/2006		Format: B	
Vérifié par / Checker by:		Date: (mm/dd/yyyy)		Échelle / Scale: 1:4	
Approuvé par / Approved by:		Date: (mm/dd/yyyy)		Dessin # / Drawing #: 112-0002-00	
				Pièce # / Part #: 112-0002-00	
				Rev #: B	

4

3

2

1

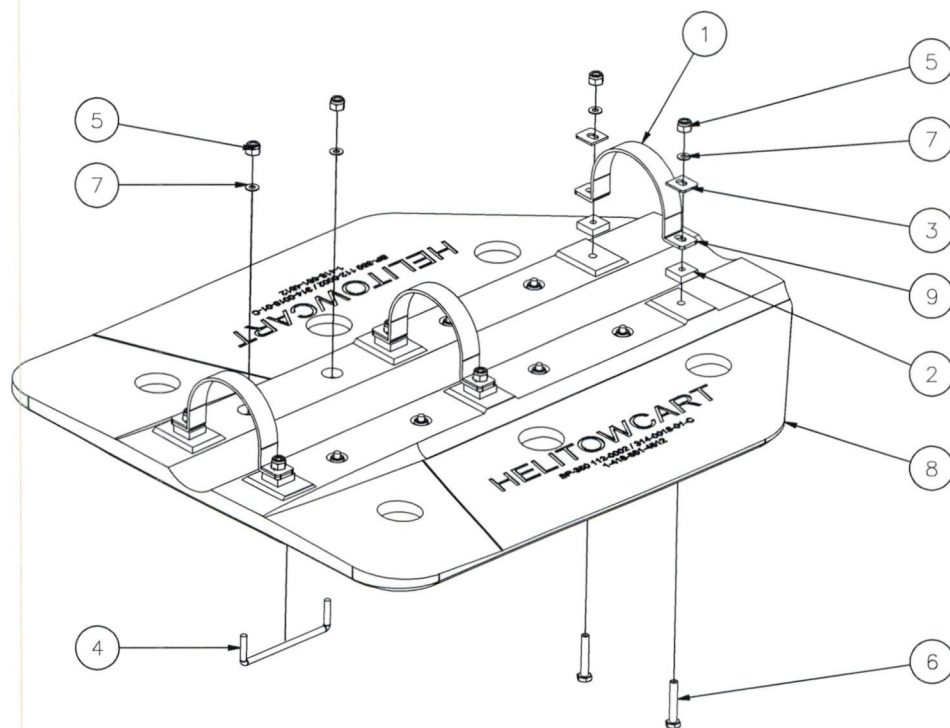
DWG No 112-0002-00-S

SHT No 1 OF 1

REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
A		ADDITION OF STREAMLINE PAD CONFIGURATION	
B		ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
C		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	

DR. & DATE


STRESS



NOTE: ICEBLADE ASSEMBLY, ITEM4,
CAN BE OMITED FROM INSTALLATION
(OPTIONAL)

1	3	314 0019 15	U SHAPED CLIP	STEEL		
2	6	314 0012 01 A	FILLER BLOCK	STEEL		1/4
3	6	314 0007 15 B	SLOTTED CLIP SUPPORT	STEEL		
4	4	314 0005 15 A	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262 0001 17 A	MD20365 42B	STEEL		1/4 28
6	6	261 0001 17 A	AN4 14A	STEEL		1/4 28 UNF
7	20	263 0001 17 A	AN960 416	STEEL		1/4
8	1	314 0018 01 S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314 0021 01 A	SHRINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

				UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		31/07/2008		 <div>YOUR SUPPLIER: NO. 100-0002-00-05 1112-0002-00-05 100-0002-00-05 100-0002-00-05 100-0002-00-05</div>	
				DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER		31/07/2008			
				LINEAR		XX		±0.030			
				TOLERANCES		XXX		±0.010			
				ANGULAR TOLERANCES: ±0° 30'		CHECKED:					
				ALL MACHINE SURFACE		STRESS:				BEARPAW – BP350 ASSEMBLY STREAMLINE	
				MATERIAL:		WEIGHT:					
				MATERIAL SPEC:		APPROVED:					
				SIZE:		APPROVED:					
				HEAT TREAT:		APPROVED: M. ZGELA		31/07/2008			
				PROTECTION:						CAGE CODE: B SIZE B DRAWING NO. 1112-0002-00-05 REV C	
				IDENTIFYING METHOD:							
DASH NO		NEXT ASSY		QTY PER ACFT		MODEL				SCALE: NTS CAD FILE: 111200020005.dwg SHEET: 3 OF 3	

BEARPAW - BP350
ASSEMBLY STREAMLINE

CAGE CODE:	SIZE	DRAWING No.	REV
B	B	112-0002-00-S	C
SCALE: NTS	CAD FILE # 112-0002-00-S.dwg	SHEET: 1 OF 1	

4

3

2

1



Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev E)

APPROVED BY:

Mirko Zgela
Mirko Zgela

DATE: AUG 01, 2008

Design Approval Representative DAR #310

*2010-04-02
DB ERITTE*

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00-B).	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration.	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.

S. Kaban 08-08-01

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-C	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	D	DAR 310	Feb 28, 2008
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C	DAR 310	July 31, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R03	DAR 310	July 31, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block ¼"	R01	DAR 310	Aug 8, 2006

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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REVISIONS & APPROVAL	p.7
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

[1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

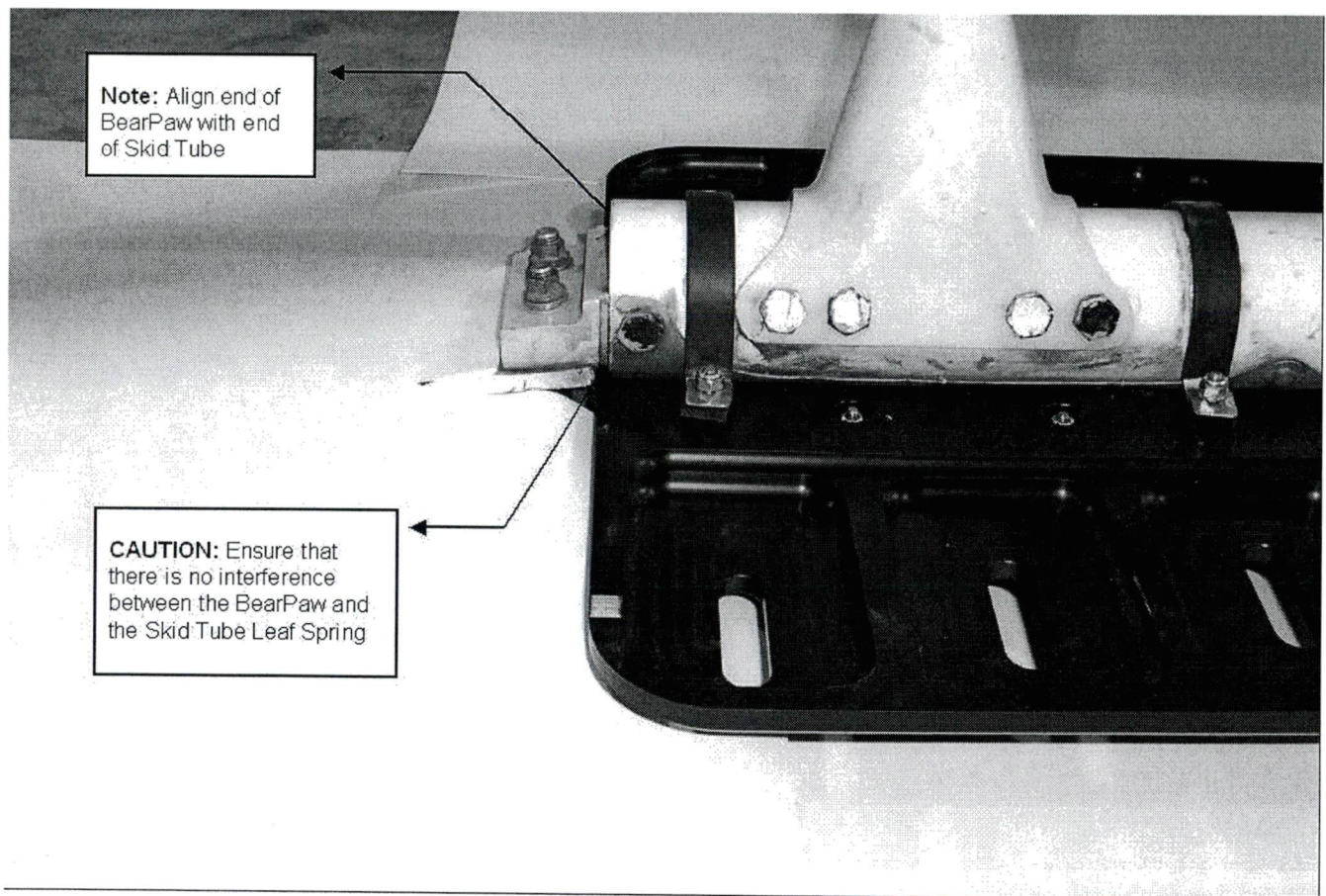
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	182,0 in. 462,2 cm	3621,8 in-lb 41,6 m-kG
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	182,0 in. 462,2 cm	3330,6 in-lb 39,3 m-kG

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Drawing no./name
BearPaw Model BP350	1	112-0002-00	VNR(112-0002-00) / BearPaw Assembly VNR (112-0002-00-S) /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	VNR106 / BearPaw BP350 – Pad
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	VNR106S / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	VNR107 / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	VNR089 / BearPaw - Slotted Clip Support

Filler blocks 1/4"	6	314-0012-01	VNR099 / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	VNR086 / IceBlade Assembly
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use BearPaw Pad P/N 314-0018-01 for VNR P/N 112-0002-00 and BearPaw Pad P/N 314-0018-01-S for VNR P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear and
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear, &
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	

C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	<u>Stiffeners:</u> NO cracks in stiffeners.
E	0,375	0,075	<u>For P/N 112-0002-00-S Only</u>

Overhaul Requirements


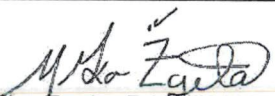
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Feb 28, 2008 Date:
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Feb 28, 2008 Date:

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) or;
BearPaw Assembly, drawing no. (112-0002-00-S)

Annex B

See: BearPaw Pad, drawing no. VNR106. Page 2 of 2 or;
BearPaw Pad, drawing no. VNR106-S. Page 2 of 2.

Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00).
P/N 112-0002-00



By VANAIR

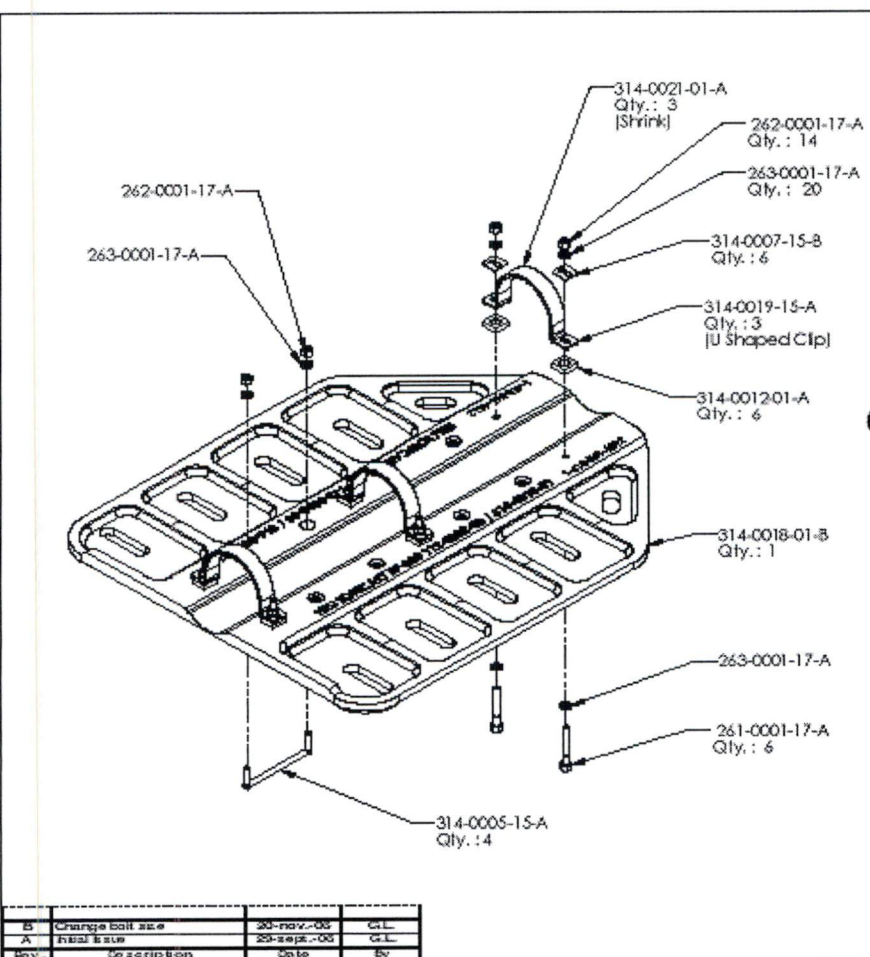
Installation Instructions – AS350/355

314-0020-00-C
BearPaw Model BP350

No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN960-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



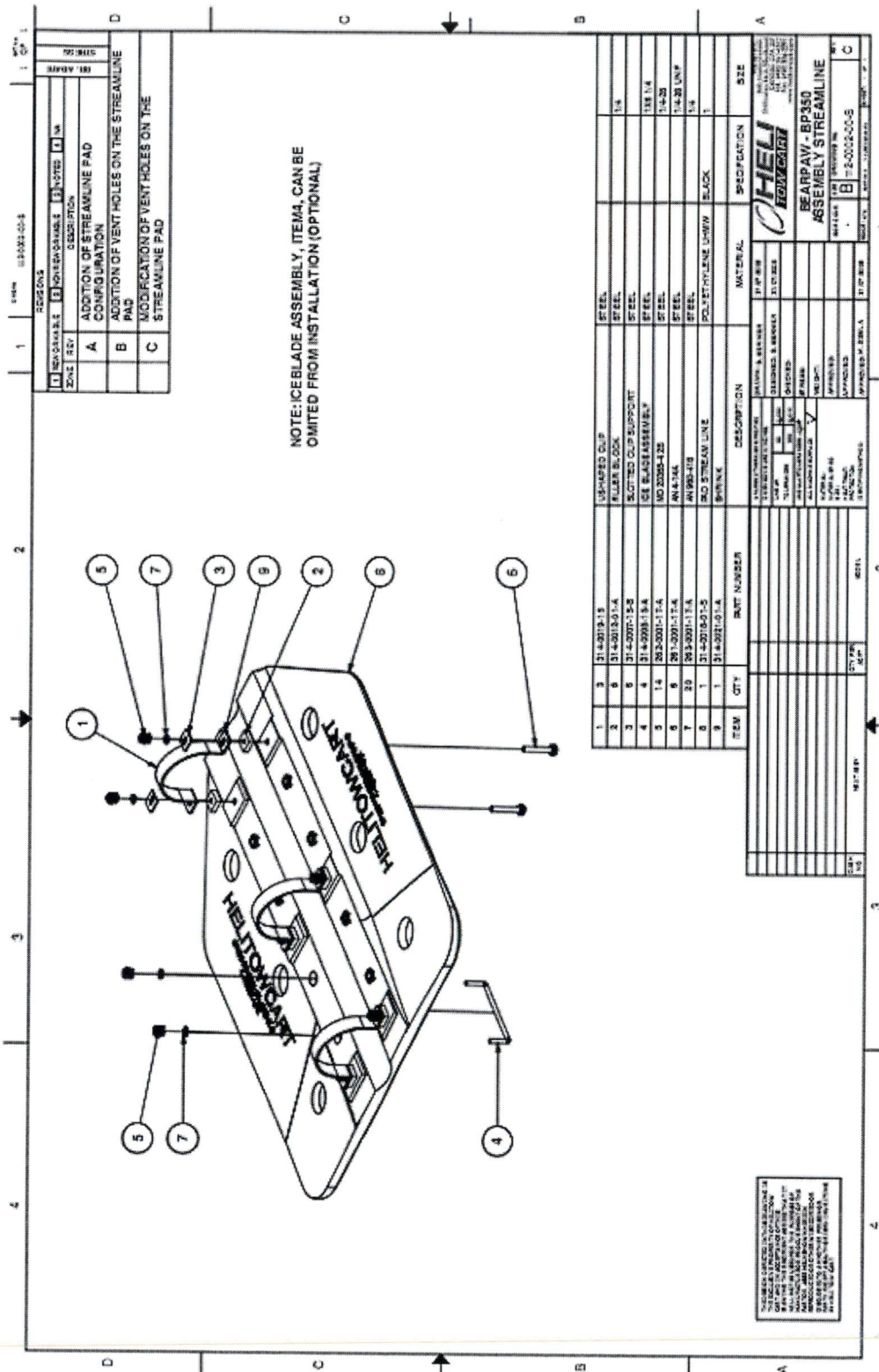
Note : Iceblade assembly can be omitted from installation (Optional)



		Vanair Inc. 860, Marie-Victoria 2440-02-104-03-0000 L'Angeles, Q.C. H9S 2C1 Tel: 818 501-4323 Fax: 818 501-4391 www.helitowcart.com		ALL DOCUMENTS ARE PROPERTY OF VANAIR INC. NO REPRODUCTION OR TRANSMISSION OF ANY INFORMATION CONTAINED HEREIN IS PERMITTED WITHOUT WRITTEN PERMISSION.	
Part Name: Bearpaw BP-350 - Assembly		Part Number: 314-0020-00		Revision: B	
Customer: 11/20/2006		Quantity: 5		Unit Price: 112-0002-00	
Manufacturer: 112-0002-00		Part Number: 112-0002-00		Revision: B	

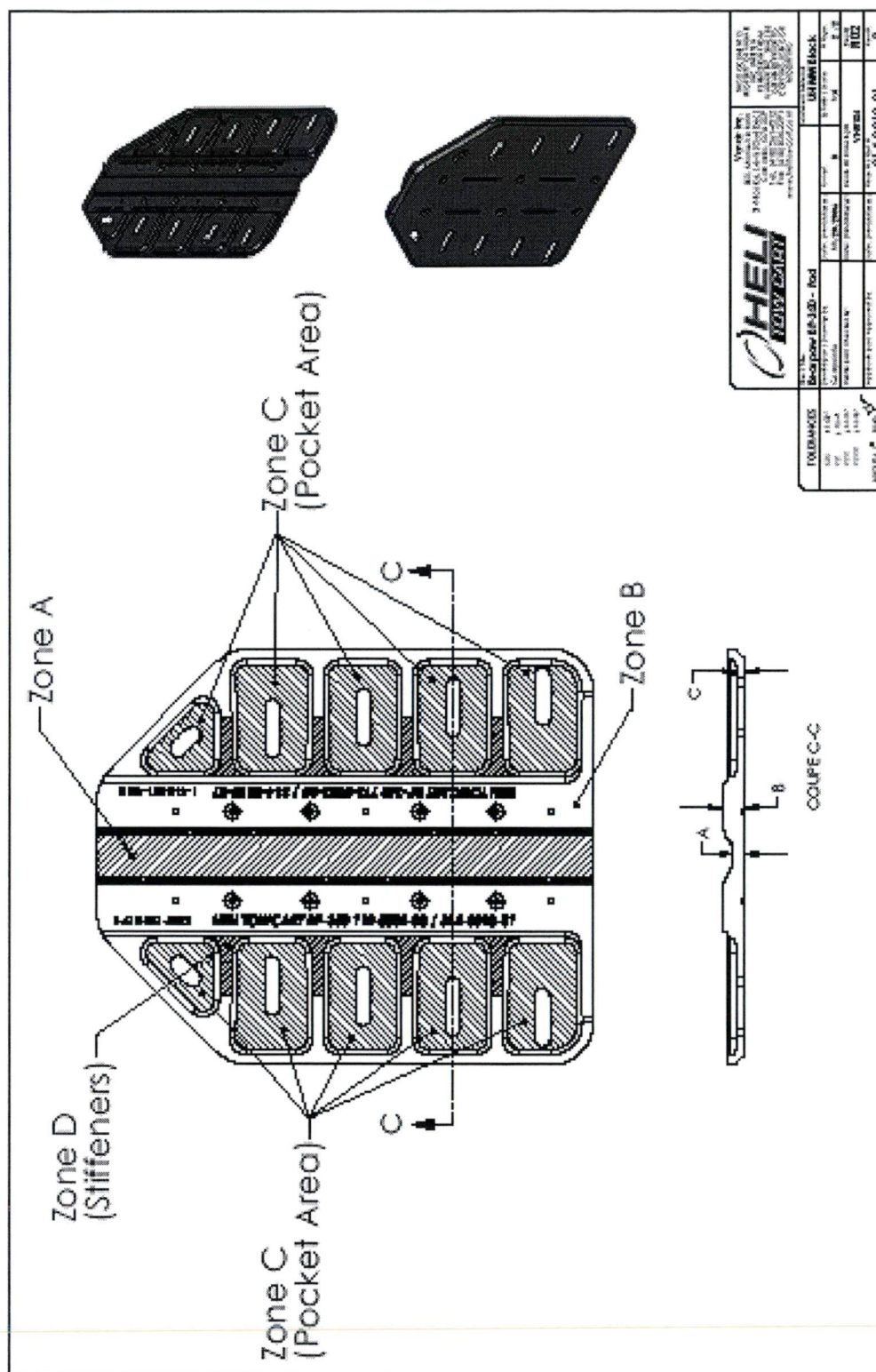
Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00-S).
P/N 112-0002-00-S



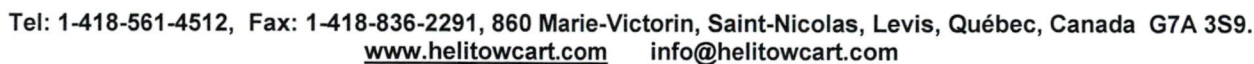
Annex B

BearPaw Pad, Drawing no. VNR106. Page 2 of 2.
P/N 314-0018-01



Annex B

BearPaw Pad, Drawing no. VNR106S. Page 2 of 2.
P/N 314-0018-01-S



Reviewed & approved by:

2006 09 09

A- REQUEST

SAFETY: ☒ No YesASS 20-03-03-01
(yyyy-mm-dd-seq)

Object

Customer informs us that Arm in w/B chart is erroneous.

By NB

Date 2010.03.03

Customer Contact

Claude Bouli, Canadian Helicopters

Commitment

- I will contact H. Lyle immediately to have this checked & corrected.

B- ACTIONS

NCR: —

CAR/PAR: —

Analysis

- Have Steve confirm that it does not have impact on units already on market.
 & Refarm the modif according to new calculation

By DB

Date 2010.03.03

Actions

Resp

Due date

Verif.

- Request Review by HZ

NB

3.3.2010

DB

- Get instruction & TOL updated

MZ

~~DB~~

3.4.20

DB

- Inform customers if necessary

N/A

- To Lyle instruction in units instore

DB

2010.4.15

DB

C- CLOSURE

By

N. Bouli

Date 2010.04.30

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

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Table 3 – Weight & Balance Data

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		Arm	Moment	Arm	Moment
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Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	182,0 in. 462,2 cm	3330,6 in-lb 39,3 m-kG

Note: Weight and moment provided are for full kit installation.

Parts Lists

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Table 4 – Parts List

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BearPaw pad ⁽¹⁾	1	314-0018-01	VNR (112-0002-00-S) / Bear Paw Streamline Assembly
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	VNR106 / BearPaw BP350 – Pad
U Shaped Clips	3	314-0019-15	VNR106S / BearPaw BP350 – Pad Streamline
Slotted Clip Support	6	314-0007-15	VNR107 / BearPaw BP350 - U Shaped Clips
			VNR089 / BearPaw - Slotted Clip Support